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# Petroleum Engineer®

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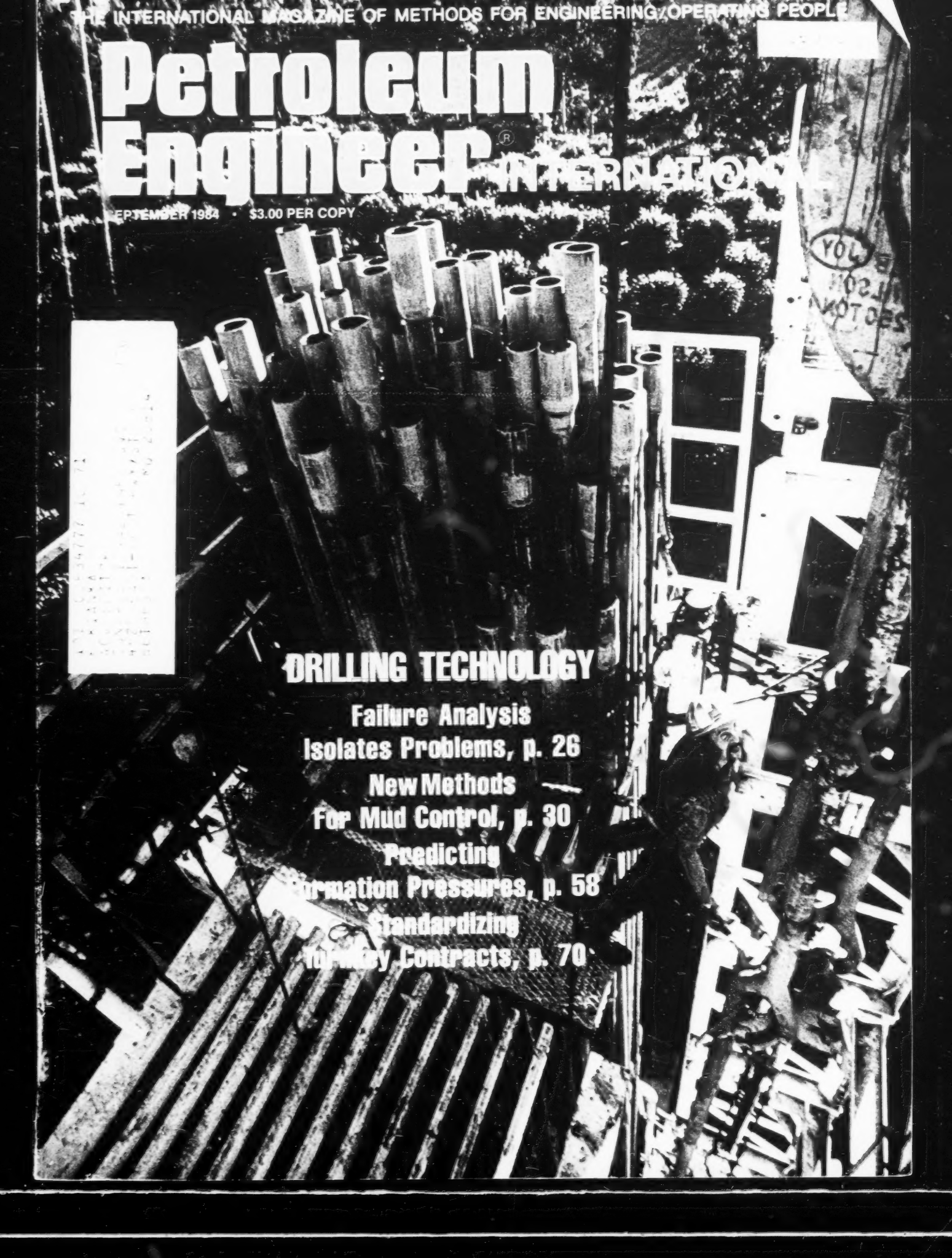

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## Rig Count Seems Back On Track

The U.S. rotary rig count seems to be headed up again, as of mid-August, after having hovered at about the 2,400-mark during June and July.

Canada's drillers also are putting up good numbers after having survived their annual springtime slump, which bottomed out at 90 active rigs on April 30 this year.

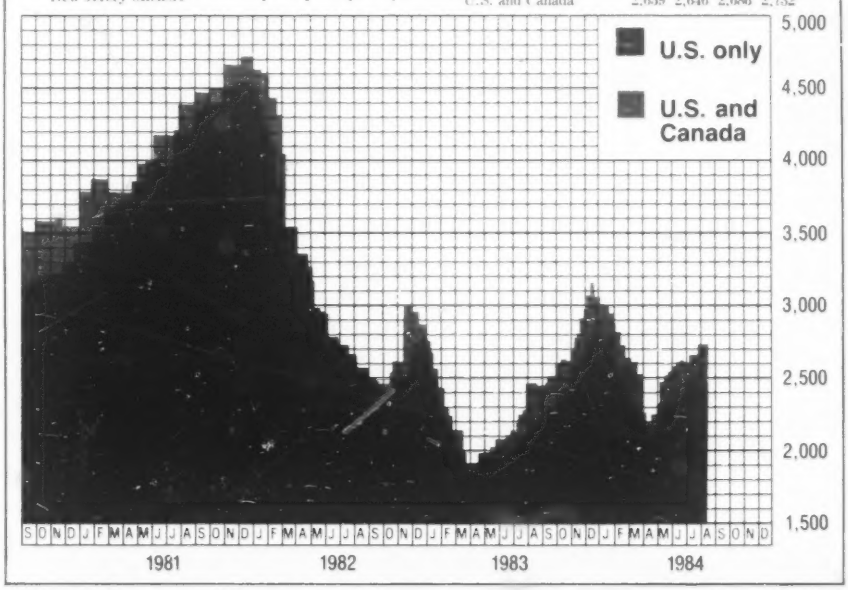
Looking ahead, the 60,832 drilling permits issued in the U.S. so far this year (as of August 3) represent a 7.4% increase over the same period last year. Petroleum Information Corp., which counts such things, also says that the 2,447 permits issued during the week ending August 3 are a 22.4% increase over the same week in 1983.

Leading U.S. drilling state continues to be Texas, with Louisiana and Oklahoma running neck and neck for second place. Kansas and Wyoming are in a close race for fourth place. And California is fifth.

### Rotary rigs actually making hole in United States & Canada

As Reported To International Association Of Drilling Contractors By Hughes Tool Co.

| | July 23, 1984 | July 30, 1984 | Aug. 6, 1984 | Aug. 13, 1984 |
|---|---|---|---|---|
| Alabama | | | | |
| Land | 10 | 10 | 10 | 12 |
| Inland Waters | 2 | 3 | 3 | 4 |
| Offshore | 3 | 2 | 2 | 2 |
| Total | 15 | 15 | 15 | 18 |
| Alaska | | | | |
| Land | 9 | 9 | 9 | 8 |
| Offshore | 5 | 6 | 6 | 7 |
| Total | 14 | 15 | 15 | 15 |
| Arkansas | 32 | 29 | 30 | 29 |
| California | | | | |
| Land | 94 | 88 | 88 | 96 |
| Offshore | 11 | 16 | 14 | 16 |
| Total | 105 | 104 | 102 | 112 |
| Colorado | 56 | 51 | 51 | 52 |
| Florida | 6 | 5 | 5 | 4 |
| Idaho | 1 | 0 | 0 | 0 |
| Illinois | 56 | 55 | 53 | 53 |
| Indiana | 8 | 8 | 8 | 8 |
| Kansas | 127 | 129 | 131 | 129 |
| Kentucky | 11 | 11 | 11 | 11 |
| North Louisiana | 24 | 26 | 32 | 33 |
| South Louisiana | | | | |
| Inland Waters | 51 | 48 | 46 | 45 |
| Land | 91 | 90 | 92 | 91 |
| Offshore | 129 | 128 | 126 | 125 |
| Total | 295 | 292 | 296 | 294 |
| Maryland | 1 | 1 | 1 | 0 |
| Michigan | 33 | 35 | 39 | 40 |
| Mississippi | 25 | 23 | 28 | 33 |
| Montana | 43 | 41 | 39 | 38 |
| Nebraska | 7 | 8 | 7 | 9 |
| Nevada | 5 | 5 | 6 | 8 |
| New Jersey Offshore | 1 | 1 | 1 | 1 |
| New Mexico | 72 | 77 | 75 | 76 |
| New York | 9 | 8 | 9 | 6 |
| North Dakota | 62 | 61 | 67 | 72 |
| Ohio | 49 | 52 | 52 | 51 |
| Oklahoma | 299 | 309 | 288 | 292 |
| Pennsylvania | 34 | 35 | 40 | 45 |
| South Dakota | 3 | 1 | 2 | 2 |
| Tennessee | 1 | 1 | 1 | 1 |
| Texas | | | | |
| Offshore | 63 | 62 | 62 | 63 |
| Inland Waters | 2 | 3 | 5 | 5 |
| Dist. 1-S. Central Tex. | 19 | 19 | 19 | 19 |
| Dist. 2-Middle Tex. Coast | 25 | 27 | 26 | 23 |
| Dist. 3-Upper Tex. Coast | 106 | 92 | 88 | 96 |
| Dist. 4-Lower Tex. Coast | 80 | 81 | 89 | 85 |
| Dist. 5-Northeast Tex. | 28 | 30 | 34 | 34 |
| Dist. 6-Far Northeast Tex. | 76 | 72 | 77 | 75 |
| Dist. 7B-N. Central Tex. | 44 | 45 | 50 | 44 |
| Dist. 7C-W. Central Tex. | 56 | 54 | 54 | 54 |
| Dist. 8-Far West Tex. | 150 | 141 | 141 | 144 |
| Dist. 8A-West Tex. | 76 | 70 | 68 | 74 |
| Dist. 9-North Tex. | 69 | 70 | 73 | 71 |
| Dist. 10-Tex. Panhandle | 41 | 40 | 38 | 42 |
| Total | 835 | 806 | 824 | 829 |
| Utah | 43 | 51 | 51 | 51 |
| Vermont | 1 | 1 | 1 | 1 |
| Virginia | 3 | 4 | 3 | 5 |
| Washington | 1 | 1 | 1 | 1 |
| West Virginia | 47 | 48 | 46 | 40 |
| Wyoming | 115 | 114 | 119 | 121 |
| Total U.S. | 2,415 | 2,397 | 2,417 | 2,447 |
| Canada | 236 | 236 | 257 | 273 |
| Canada-Offshore | 8 | 13 | 12 | 12 |
| U.S. and Canada | 2,659 | 2,646 | 2,686 | 2,732 |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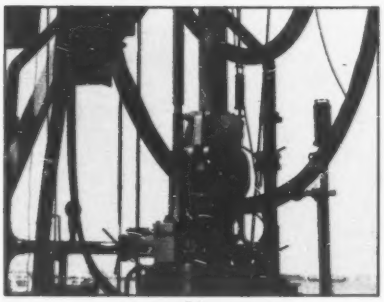

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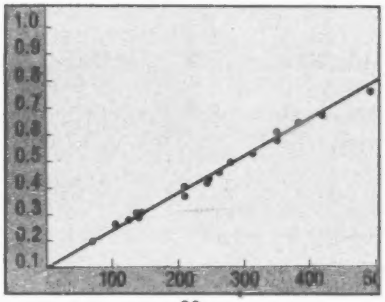


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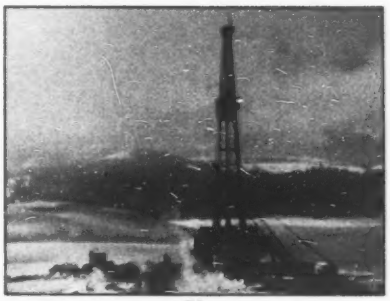

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by Richard D. McNally, Associate Editor, and Steven D. Moore, Drilling Editor. Some of the technological achievements in drilling that have transpired in the last few years are highlighted in a review that also looks to the future.

**Failure Analysis Isolates Drilling Problems** ..... 26
by Stanford A. Smith Jr. and James D. Garber, University of Southwestern Louisiana, and Larry White, Weintritt Laboratories. A perspective of the most common failures that occur in drilling, and how to prevent them.

**New Methods For Low-Solids Mud Control, Part 1** ..... 30
by J. C. Estes and D. B. Anderson, Amoco Production Co., and G. R. Benta, Welchem Inc. A simple test that can be performed at the rig location is accurate enough to indicate whether further testing by laboratory analysis is required.

**Graphs Show Liquid Compressibility Factors** ..... 46
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**Electrical Submersible Pump Teardown Inspection, Part 6** ..... 54
by James F. Lea, Amoco Production Co., and William J. Powers, TRW Reda. A detailed post-run inspection often can determine cause of failure and lead to the selection of more suitable equipment for the next installation.

**Microcomputer Aids "d" Exponent Technique** ..... 58
by Xiling Sun and Scott L. Huang, University of Alaska. An accurate method for predicting formation pressures and detecting overpressure transition zones is essential for safe, economic drilling operations, even where experience is vast.

**Make A Turnkey Drilling Contract Work For You** ..... 70
by Dean Pierce and John Wolfe, Rosewood Resources (POC) Inc. The responsibilities of the operator and contractor often are left unwritten in turnkey contracts, opening the door for problems when the contract is later interpreted.

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ABOUT THE COVER: Drilling technology continues to advance, and some recent achievements are highlighted on page 21. (Photo courtesy of Sun Company Inc.)

NEXT MONTH: The latest advances in both drilling and production will be featured in the October issue.